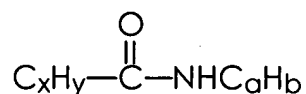


1. An ink composition comprising (a) an ink carrier which comprises a monoamide, a tetra-amide, or a mixture thereof; (b) a polyalkylene succinimide; and (c) pigment particles.

2. An ink according to claim 1 wherein the monoamide is stearamide, behenamide, oleamide, erucamide, behenyl behenamide, stearyl stearamide, stearyl erucamide, erucyl erucamide, oleyl palmitamide, erucyl stearamide, or mixtures thereof.

3. An ink according to claim 1 wherein the monoamide is of the formula

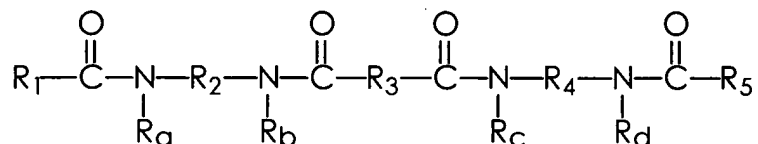


wherein x is an integer of from about 5 to about 21, y is an integer of from about 11 to about 43, a is an integer of from about 6 to about 22, and b is an integer of from about 13 to about 45.

4. An ink according to claim 1 wherein the monoamide is present in the ink carrier in an amount of at least about 8 percent by weight.

5. An ink according to claim 1 wherein the monoamide is present in the ink carrier in an amount of no more than about 70 percent by weight.

6. An ink according to claim 1 wherein the tetra-amide is of the formula



wherein (1)  $\text{R}_a$ ,  $\text{R}_b$ ,  $\text{R}_c$ , and  $\text{R}_d$  each, independently of the others, is (a) a hydrogen atom, (b) an alkyl group, (c) an aryl group, (d) an arylalkyl group, or (e) an alkylaryl group, (2)  $\text{R}_2$ ,  $\text{R}_3$ , and  $\text{R}_4$  each, independently of the others, are (a) an alkylene group, (b) an arylene group, (c) an arylalkylene group, or (d) an alkylarylene group, and (3)  $\text{R}_1$  and  $\text{R}_5$  each, independently of the other, is (a) an alkyl group, (b) an aryl group, (c) an arylalkyl group, or (d) an alkylaryl group.

7. An ink according to claim 6 wherein at least one of the alkyl, alkylene, aryl, arylene, arylalkyl, arylalkylene, alkylaryl, and alkylarylene groups is substituted.

8. An ink according to claim 6 wherein none of the alkyl, alkylene, aryl, arylene, arylalkyl, arylalkylene, alkylaryl, and alkylarylene groups are substituted.

9. An ink according to claim 6 wherein at least one of the alkyl, alkylene, aryl, arylene, arylalkyl, arylalkylene, alkylaryl, and alkylarylene groups has at least one hetero atom therein.

10. An ink according to claim 9 wherein the one or more hetero atom is oxygen, nitrogen, sulfur, silicon, phosphorus, or a mixture thereof.

11. An ink according to claim 6 wherein none of the alkyl, alkylene, aryl, arylene, arylalkyl, arylalkylene, alkylaryl, and alkylarylene groups have hetero atoms therein.

12. An ink according to claim 6 wherein  $R_1$  is an alkyl group with about 18 carbon atoms.

13. An ink according to claim 6 wherein  $R_1$  and  $R_5$  are each alkyl groups with about 18 carbon atoms.

14. An ink according to claim 6 wherein  $R_1$  is an alkyl group with at least about 37 carbon atoms.

15. An ink according to claim 6 wherein  $R_1$  and  $R_5$  are each alkyl groups with at least about 37 carbon atoms.

16. An ink according to claim 6 wherein  $R_1$  is an alkyl group with about 48 carbon atoms.

17. An ink according to claim 6 wherein  $R_1$  and  $R_5$  are each alkyl groups with about 48 carbon atoms.

18. An ink according to claim 6 wherein  $R_1$  and  $R_5$  are both  $-(CH_2)_{16}CH_3$ ,  $R_2$  and  $R_4$  are each  $-CH_2CH_2-$ , and  $R_3$  is a branched unsubstituted alkyl group having about 34 carbon atoms.

19. An ink according to claim 6 wherein  $R_1$  and  $R_5$  are both  $-(CH_2)_nCH_3$  wherein  $n$  is 47 or 48,  $R_2$  and  $R_4$  are each  $-CH_2CH_2-$ , and  $R_3$  is a branched unsubstituted alkyl group having about 34 carbon atoms.

20. An ink according to claim 1 wherein the tetra-amide is present in the ink carrier in an amount of at least about 10 percent by weight.

21. An ink according to claim 1 wherein the tetra-amide is present in the ink carrier in an amount of no more than about 32 percent by weight.

22. An ink according to claim 1 further comprising a urethane.

23. An ink according to claim 22 wherein the urethane is derived from the reaction of two equivalents of hydroabietyl alcohol and one equivalent of isophorone diisocyanate.

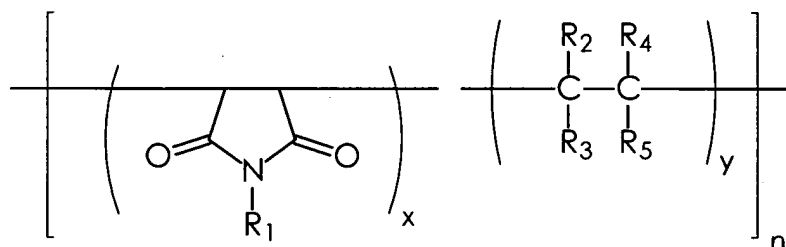
24. An ink according to claim 1 further comprising an isocyanate-derived material that is the adduct of three equivalents of stearyl isocyanate and a glycerol propoxylate.

25. An ink according to claim 1 further comprising an isocyanate-derived material that is the product of the reaction of about 1.5 parts hydroabietyl alcohol, about 0.5 part octadecyl amine, and about 1 part isophorone diisocyanate.

26. An ink according to claim 1 wherein the monoamide is stearyl stearamide, is present in the carrier in an amount of at least about 8 percent by weight, and is present in the carrier in an amount of no more than about 32 percent by weight, wherein the tetra-amide is a dimer acid based tetra-amide that is the reaction product of dimer acid, ethylene diamine, and a long chain hydrocarbon having greater than thirty six carbon atoms and having a terminal carboxylic acid group, is present in the carrier in an amount of at least about 10 percent by weight, and is present in the carrier in an amount of no more than about 32 percent by weight, said ink further comprising (1) a polyethylene wax, present in the carrier in an amount of at least about 25 percent by weight, and present in the carrier in an amount of no more than about 60 percent by weight, (2) a urethane resin derived from the reaction of two equivalents of hydroabietyl alcohol and one equivalent of isophorone diisocyanate, present in the carrier in an amount of at least about 6 percent by weight, and present in the carrier in an amount of no more than about 16 percent by weight, (3) a urethane resin that is the adduct of three equivalents of stearyl isocyanate and a glycerol-based alcohol, present in the carrier in an amount of at least about 2 percent by weight, and present in the carrier in an amount of no more than about 13 percent by weight, and (4) an antioxidant, present in the carrier in an amount of at least about 0.01 percent by weight, and present in the carrier in an amount of no more than about 1 percent by weight.

27. An ink according to claim 1 further comprising a polyethylene wax.

28. An ink according to claim 1 wherein the polyalkylene succinimide is of the formula



wherein x is an integer representing the number of repeat succinimide units, y is an integer representing the number of repeat alkylene units, n is an integer, R<sub>1</sub> is an alkyl group, an aryl group, an arylalkyl group, or an alkylaryl group, and R<sub>2</sub> R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> each, independently of the others, is a hydrogen atom or an alkyl group.

29. An ink according to claim 28 wherein x is from 1 to about 3, y is from 1 to about 3, n is at least about 2, and n is no more than about 500.

30. An ink according to claim 28 wherein at least one of the alkyl, aryl, arylalkyl, and alkylaryl groups is substituted.

31. An ink according to claim 28 wherein none of the alkyl, aryl, arylalkyl, and alkylaryl groups are substituted.

32. An ink according to claim 28 wherein at least one of the alkyl, aryl, arylalkyl, and alkylaryl groups has at least one hetero atom therein.

33. An ink according to claim 32 wherein the one or more hetero atom is oxygen, nitrogen, sulfur, silicon, phosphorus, or a mixture thereof.

34. An ink according to claim 28 wherein none of the alkyl, aryl, arylalkyl, and alkylaryl groups have hetero atoms therein.

35. An ink according to claim 28 wherein  $R_2$ ,  $R_3$ , and  $R_4$  are hydrogen atoms and  $R_5$  is an alkyl group.

36. An ink according to claim 28 wherein  $R_2$  and  $R_3$  are hydrogen atoms and  $R_4$  and  $R_5$  are methyl groups.

37. An ink according to claim 1 wherein the polyalkylene succinimide is polyisobutylene succinimide.

38. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of at least about  $1 \times 10^{-7}$  percent by weight of the ink.

39. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of at least about  $1 \times 10^{-5}$  percent by weight of the ink.

40. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of at least about 0.001 percent by weight of the ink.

41. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of at least about 0.005 percent by weight of the ink.

42. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of at least about 0.01 percent by weight of the ink.

43. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of no more than about 40 percent by weight of the ink.

44. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of no more than about 30 percent by weight of the ink.

45. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of no more than about 20 percent by weight of the ink.

46. An ink according to claim 1 wherein the polyalkylene succinimide is present in the ink in an amount of no more than about 10 percent by weight of the ink.

47. An ink according to claim 1 wherein the pigment is present in the ink in an amount of at least about 0.1 percent by weight of the ink.

48. An ink according to claim 1 wherein the pigment is present in the ink in an amount of at least about 0.2 percent by weight of the ink.

49. An ink according to claim 1 wherein the pigment is present in the ink in an amount of at least about 0.5 percent by weight of the ink.

50. An ink according to claim 1 wherein the pigment is present in the ink in an amount of no more than about 50 percent by weight of the ink.

51. An ink according to claim 1 wherein the pigment is present in the ink in an amount of no more than about 20 percent by weight of the ink.

52. An ink according to claim 1 wherein the pigment is present in the ink in an amount of no more than about 10 percent by weight of the ink.

53. An ink according to claim 1 further containing a dye.

54. An ink according to claim 53 wherein the dye is a phthalocyanine.

55. A process which comprises (1) incorporating into an ink jet printing apparatus a phase change ink according to claim 1; (2) melting the ink; and (3) causing droplets of the melted ink to be ejected in an imagewise pattern onto a substrate.

56. A process according to claim 55 wherein the substrate is a final recording sheet and droplets of the melted ink are ejected in an imagewise pattern directly onto the final recording sheet.

57. A process according to claim 55 wherein the substrate is an intermediate transfer member and droplets of the melted ink are ejected in an imagewise pattern onto the intermediate transfer member followed by transfer of the imagewise pattern from the intermediate transfer member to a final recording sheet.

58. A process according to claim 57 wherein the intermediate transfer member is heated to a temperature above that of the final recording sheet and below that of the melted ink in the printing apparatus.

59. A process according to claim 55 wherein the printing apparatus employs a piezoelectric ink jet process, wherein droplets of the ink are caused to be ejected in imagewise pattern by oscillations of piezoelectric vibrating elements.

60. An ink composition comprising (a) an ink carrier, (b) a polyalkylene succinimide, and (c) pigment particles, said ink having a conductivity greater than  $1 \times 10^{-8}$  Siemens per centimeter.

61. An ink according to claim 60 wherein the ink has a conductivity greater than about  $1.5 \times 10^{-8}$  Siemens per centimeter.

62. An ink according to claim 60 wherein the ink has a conductivity greater than about  $2 \times 10^{-8}$  Siemens per centimeter.

63. An ink according to claim 60 wherein the ink has a conductivity greater than about  $3 \times 10^{-8}$  Siemens per centimeter.

64. An ink according to claim 60 wherein the ink has a conductivity greater than about  $4 \times 10^{-8}$  Siemens per centimeter.

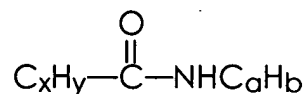
65. An ink according to claim 60 wherein the ink has a conductivity greater than about  $5 \times 10^{-8}$  Siemens per centimeter.

66. An ink according to claim 60 wherein the ink has a conductivity greater than about  $3.5 \times 10^{-3}$  Siemens per centimeter.

67. An ink according to claim 60 wherein the ink carrier comprises a monoamide.

68. An ink according to claim 67 wherein the monoamide is stearamide, behenamide, oleamide, erucamide, behenyl behenamide, stearyl stearamide, stearyl erucamide, erucyl erucamide, oleyl palmitamide, erucyl stearamide, or mixtures thereof.

69. An ink according to claim 67 wherein the monoamide is of the formula



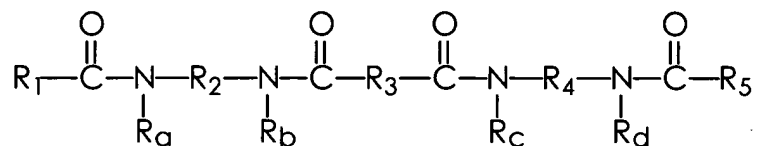
wherein x is an integer of from about 5 to about 21, y is an integer of from about 11 to about 43, a is an integer of from about 6 to about 22, and b is an integer of from about 13 to about 45.

70. An ink according to claim 67 wherein the monoamide is present in the ink carrier in an amount of at least about 8 percent by weight.

71. An ink according to claim 67 wherein the monoamide is present in the ink carrier in an amount of no more than about 70 percent by weight.

72. An ink according to claim 60 wherein the ink carrier comprises a tetra-amide.

73. An ink according to claim 72 wherein the tetra-amide is of the formula



wherein (1)  $\text{R}_a$ ,  $\text{R}_b$ ,  $\text{R}_c$ , and  $\text{R}_d$  each, independently of the others, is (a) a hydrogen atom, (b) an alkyl group, (c) an aryl group, (d) an arylalkyl group, or (e) an alkylaryl group, (2)  $\text{R}_2$ ,  $\text{R}_3$ , and  $\text{R}_4$  each, independently of the others, are (a) an alkylene group, (b) an arylene group, (c) an arylalkylene group, or (d) an alkylarylene group, and (3)  $\text{R}_1$  and  $\text{R}_5$  each, independently of the other, is (a) an alkyl group, (b) an aryl group, (c) an arylalkyl group, or (d) an alkylaryl group.

74. An ink according to claim 73 wherein at least one of the alkyl, alkylene, aryl, arylene, arylalkyl, arylalkylene, alkylaryl, and alkylarylene groups is substituted.

75. An ink according to claim 73 wherein none of the alkyl, alkylene, aryl, arylene, arylalkyl, arylalkylene, alkylaryl, and alkylarylene groups are substituted.

76. An ink according to claim 73 wherein at least one of the alkyl, alkylene, aryl, arylene, arylalkyl, arylalkylene, alkylaryl, and alkylarylene groups has at least one hetero atom therein.

77. An ink according to claim 76 wherein the one or more hetero atom is oxygen, nitrogen, sulfur, silicon, phosphorus, or a mixture thereof.

78. An ink according to claim 73 wherein none of the alkyl, alkylene, aryl, arylene, arylalkyl, arylalkylene, alkylaryl, and alkylarylene groups have hetero atoms therein.

79. An ink according to claim 73 wherein  $R_1$  is an alkyl group with about 18 carbon atoms.

80. An ink according to claim 73 wherein  $R_1$  and  $R_5$  are each alkyl groups with about 18 carbon atoms.

81. An ink according to claim 73 wherein  $R_1$  is an alkyl group with at least about 37 carbon atoms.

82. An ink according to claim 73 wherein  $R_1$  and  $R_5$  are each alkyl groups with at least about 37 carbon atoms.

83. An ink according to claim 73 wherein  $R_1$  is an alkyl group with about 48 carbon atoms.

84. An ink according to claim 73 wherein  $R_1$  and  $R_5$  are each alkyl groups with about 48 carbon atoms.

85. An ink according to claim 73 wherein  $R_1$  and  $R_5$  are both  $-(CH_2)_{16}CH_3$ ,  $R_2$  and  $R_4$  are each  $-CH_2CH_2-$ , and  $R_3$  is a branched unsubstituted alkyl group having about 34 carbon atoms.

86. An ink according to claim 73 wherein  $R_1$  and  $R_5$  are both  $-(CH_2)_nCH_3$  wherein  $n$  is 47 or 48,  $R_2$  and  $R_4$  are each  $-CH_2CH_2-$ , and  $R_3$  is a branched unsubstituted alkyl group having about 34 carbon atoms.

87. An ink according to claim 72 wherein the tetra-amide is present in the ink carrier in an amount of at least about 10 percent by weight.

88. An ink according to claim 72 wherein the tetra-amide is present in the ink carrier in an amount of no more than about 32 percent by weight.

89. An ink according to claim 60 wherein the ink carrier comprises a urethane.

90. An ink according to claim 89 wherein the urethane is derived from the reaction of two equivalents of hydroabietyl alcohol and one equivalent of isophorone diisocyanate.

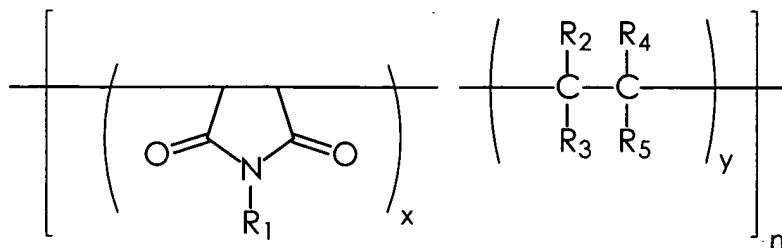
91. An ink according to claim 60 wherein the ink carrier comprises an isocyanate-derived material that is the adduct of three equivalents of stearyl isocyanate and a glycerol propoxylate.

92. An ink according to claim 60 wherein the ink carrier comprises an isocyanate-derived material that is the product of the reaction of about 1.5 parts hydroabietyl alcohol, about 0.5 part octadecyl amine, and about 1 part isophorone diisocyanate.

93. An ink according to claim 60 wherein the ink carrier comprises (1) stearyl stearamide, present in the carrier in an amount of at least about 8 percent by weight, and present in the carrier in an amount of no more than about 32 percent by weight, (2) a dimer acid based tetra-amide that is the reaction product of dimer acid, ethylene diamine, and a long chain hydrocarbon having greater than thirty six carbon atoms and having a terminal carboxylic acid group, present in the carrier in an amount of at least about 10 percent by weight, and present in the carrier in an amount of no more than about 32 percent by weight, (3) a polyethylene wax, present in the carrier in an amount of at least about 25 percent by weight, and present in the carrier in an amount of no more than about 60 percent by weight, (4) a urethane resin derived from the reaction of two equivalents of hydroabietyl alcohol and one equivalent of isophorone diisocyanate, present in the carrier in an amount of at least about 6 percent by weight, and present in the carrier in an amount of no more than about 16 percent by weight, (5) a urethane resin that is the adduct of three equivalents of stearyl isocyanate and a glycerol-based alcohol, present in the carrier in an amount of at least about 2 percent by weight, and present in the carrier in an amount of no more than about 13 percent by weight, and (6) an antioxidant, present in the carrier in an amount of at least about 0.01 percent by weight, and present in the carrier in an amount of no more than about 1 percent by weight.

94. An ink according to claim 60 wherein the ink carrier comprises a polyethylene wax.

95. An ink according to claim 60 wherein the polyalkylene succinimide is of the formula



wherein x is an integer representing the number of repeat succinimide units, y is an integer representing the number of repeat alkylene units, n is an integer, R<sub>1</sub> is an alkyl group, an aryl group, an arylalkyl group, or an alkylaryl group, and R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> each, independently of the others, is a hydrogen atom or an alkyl group.

96. An ink according to claim 95 wherein x is from 1 to about 3, y is from 1 to about 3, n is at least about 2, and n is no more than about 500.

97. An ink according to claim 95 wherein at least one of the alkyl, aryl, arylalkyl, and alkylaryl groups is substituted.

98. An ink according to claim 95 wherein none of the alkyl, aryl, arylalkyl, and alkylaryl groups are substituted.

99. An ink according to claim 95 wherein at least one of the alkyl, aryl, arylalkyl, and alkylaryl groups has at least one hetero atom therein.

100. An ink according to claim 99 wherein the one or more hetero atom is oxygen, nitrogen, sulfur, silicon, phosphorus, or a mixture thereof.

101. An ink according to claim 95 wherein none of the alkyl, aryl, arylalkyl, and alkylaryl groups have hetero atoms therein.

102. An ink according to claim 95 wherein  $R_2$ ,  $R_3$ , and  $R_4$  are hydrogen atoms and  $R_5$  is an alkyl group.

103. An ink according to claim 95 wherein  $R_2$  and  $R_3$  are hydrogen atoms and  $R_4$  and  $R_5$  are methyl groups.

104. An ink according to claim 60 wherein the polyalkylene succinimide is polyisobutylene succinimide.

105. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of at least about  $1 \times 10^{-7}$  percent by weight of the ink.

106. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of at least about  $1 \times 10^{-5}$  percent by weight of the ink.

107. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of at least about 0.001 percent by weight of the ink.

108. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of at least about 0.005 percent by weight of the ink.

109. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of at least about 0.01 percent by weight of the ink.

110. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of no more than about 40 percent by weight of the ink.

111. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of no more than about 30 percent by weight of the ink.

112. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of no more than about 20 percent by weight of the ink.

113. An ink according to claim 60 wherein the polyalkylene succinimide is present in the ink in an amount of no more than about 10 percent by weight of the ink.

114. An ink according to claim 60 wherein the pigment is present in the ink in an amount of at least about 0.1 percent by weight of the ink.

115. An ink according to claim 60 wherein the pigment is present in the ink in an amount of at least about 0.2 percent by weight of the ink.

116. An ink according to claim 60 wherein the pigment is present in the ink in an amount of at least about 0.5 percent by weight of the ink.

117. An ink according to claim 60 wherein the pigment is present in the ink in an amount of no more than about 50 percent by weight of the ink.

118. An ink according to claim 60 wherein the pigment is present in the ink in an amount of no more than about 20 percent by weight of the ink.

119. An ink according to claim 60 wherein the pigment is present in the ink in an amount of no more than about 10 percent by weight of the ink.

120. An ink according to claim 60 further containing a dye.

121. An ink according to claim 120 wherein the dye is a phthalocyanine.

122. A process which comprises (1) incorporating into an ink jet printing apparatus a phase change ink according to claim 60; (2) melting the ink; and (3) causing droplets of the melted ink to be ejected in an imagewise pattern onto a substrate.

123. A process according to claim 122 wherein the substrate is a final recording sheet and droplets of the melted ink are ejected in an imagewise pattern directly onto the final recording sheet.

124. A process according to claim 122 wherein the substrate is an intermediate transfer member and droplets of the melted ink are ejected in an imagewise pattern onto the intermediate transfer member followed by transfer of the imagewise pattern from the intermediate transfer member to a final recording sheet.

125. A process according to claim 124 wherein the intermediate transfer member is heated to a temperature above that of the final recording sheet and below that of the melted ink in the printing apparatus.

126. A process according to claim 122 wherein the printing apparatus employs a piezoelectric ink jet process, wherein droplets of the ink are caused to be ejected in imagewise pattern by oscillations of piezoelectric vibrating elements.

127. An ink set comprising (1) a first ink comprising (a) an ink carrier, (b) a polyalkylene succinimide, and (c) pigment particles, and (2) a second ink comprising a dye colorant and a second ink carrier, wherein the first ink carrier contains substantially the same components as the second ink carrier.